Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for sensing gases using a diode laser spectrometer, the method comprising: introducing a sample gas into a non-resonant optical cell having reflecting elements; applying a step function electrical pulse to a semiconductor diode laser to cause the laser to output a continuous wavelength chirp for injecting into the optical cell; injecting the wavelength chirp into the optical cell; using the wavelength variation provided by the wavelength chirp as a wavelength scan, and detecting light emitted from the cell, wherein the method further ~~involves~~ includes using a chirp rate such that there is a time delay between spots on the reflecting elements sufficient to prevent light interference occurring in the optical cell.

2. (Original) A method as claimed in claim 1, wherein the duration of the pulse applied to the semiconductor diode laser is equal to or less than one microsecond.

3. (Currently Amended) A method as claimed in claim 1 ~~or claim 2~~, wherein the duration of the pulse is less than the duration necessary for the optical output power to become zero after the drive pulse has been applied.

4. (Currently Amended) A method as claimed in ~~any of the preceding claims~~claim 1 further involving varying the rate of change of wavelength per unit time.

5. (Previously Presented) A method as claimed in claim 4 wherein varying the rate of change of the wavelength per unit time involves varying the amplitude of the current/voltage drive pulse.

6. (Currently Amended) A method as claimed in ~~any of the preceding claims~~claim 1 comprising adjusting the wavelength scan length.

7. (Previously Presented) A method as claimed in claim 6 wherein adjusting the wavelength scans involves varying the duration of the current/voltage drive pulse.

8. (Currently Amended) A method as claimed in ~~any of the preceding claims~~claim 1 comprising temperature varying the semiconductor diode laser temperature.

9. (Currently Amended) A method as claimed in ~~any of the preceding claims~~claim 1, wherein the semiconductor diode laser has output radiation having wavelengths in the region of 1 μm to 14 μm.

10. (Currently Amended) A method as claimed in ~~any of the preceding claims~~claim 1 wherein the semiconductor laser is a quantum cascade laser.

11. (Currently Amended) A method as claimed in ~~any of the preceding claims~~claim 1, wherein the cell is a Herriot cell.

12. (Currently Amended) A method as claimed in ~~any of the preceding claims~~claim 1, wherein the amount of radiation absorbed is determined using an amplitude measurement of radiation transmitted through the sample and an amplitude measurement of a reference pulse.

13. (Currently Amended) A semiconductor diode laser spectrometer~~, preferably a quantum radiation cascade laser spectrometer,~~ for measuring absorption by a sample, the spectrometer comprising a semiconductor diode laser; a non-resonant optical cell for containing a sample gas and having reflecting elements at either end thereof; an electric pulse generator adapted to apply a substantially step function electrical pulse to the laser to cause the laser to introduce a continuous wavelength chirp into the sample cell, and a detector for detecting light output from the cell and adapted to use the wavelength variation of the wavelength chirp as a wavelength scan, wherein the chirp rate used is such that there is a time delay between spots on the reflecting elements sufficient to prevent light interference occurring in the optical cell.

14. (Previously Presented) A spectrometer as claimed in claim 13, wherein the duration of the electrical pulse is equal to or less than 1 microsecond.

15. (Currently Amended) A spectrometer as claimed in claim 13~~ or clam 14~~, ~~wherein~~ further comprising means ~~are provided~~ for varying the rate of change of wavelength per unit time of the chirp.

16. (Previously Presented) A spectrometer as claimed in claim 15 wherein the means for varying the rate of change of the wavelength are operable to vary the amplitude of the current/voltage drive pulse.

17. (Currently Amended) A spectrometer as claimed in ~~any of claims~~claim 13 ~~to 16 wherein~~ further comprising means ~~are provided~~ for adjusting the wavelength scan length.

18. (Previously Presented) A spectrometer as claimed in claim 17 wherein the means for adjusting the wavelength scan are operable to vary the duration of the electrical pulse.

19. (Currently Amended) A spectrometer as claimed in ~~any of claims~~ claim 13 ~~to 18 wherein~~further comprising means ~~are provided~~ for varying a starting wavelength point of the wavelength scan.

20. (Previously Presented) A spectrometer as claimed in claim 19, wherein the means for varying a starting wavelength point are operable to vary the semiconductor diode laser base temperature.

21. (Previously Presented) A spectrometer as claimed in claim 20, wherein the means for varying the temperature of the semiconductor diode laser comprise a thermoelectric heater/cooler or means for adjusting the duty cycle or the pulse repetition frequency of the repeated current/voltage drive pulses applied to the electrical contacts of the laser diode or means for adjusting the pulse

amplitude of the current/voltage drive pulses or means for adjusting the base DC level of the current/voltage drive pulses applied to the electrical contacts of the laser diode.

22. (Currently Amended) A spectrometer as claimed in ~~any of claims~~claim 13 ~~to 21~~, wherein a beam splitter ~~or other like element~~ is provided to split radiation output from the laser into two components, the first component for passing through the sample and the a second component that does not pass through the sample.

23. (Currently Amended) A spectrometer as claimed in ~~any of claims~~ claim 13 ~~to 22~~, wherein the semiconductor diode laser emits radiation having wavelengths in the region of 1 μm to 14 μm.

24. (Currently Amended) A spectrometer as claimed in ~~any of claims~~claim 13 ~~to 23~~, wherein the optical cell is a Herriot cell.

25. (Currently Amended) A spectrometer as claimed in ~~any of claims~~claim 13 ~~to 24~~, wherein the chirp has a frequency variation of about 60GHz.

26. (Currently Amended) A spectrometer as claimed in ~~any of claims~~claim 13 ~~to 25~~, wherein the applied pulse has a duration that is greater than 150ns, in particular greater than 200ns.

27. (Currently Amended) A spectrometer as claimed in ~~any of claims~~claim 13 ~~to 25~~, wherein the applied pulse has a duration that is in the range of 150 to 300ns, preferably 200 to 300ns.